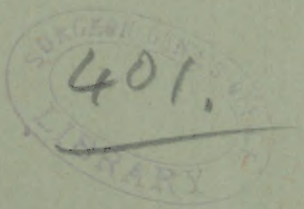
DISCUSSION ON CRANIOTOMY.

REPRINTED FROM THE TRANSACTIONS OF
THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS,
SEPTEMBER, 1889.



DISCUSSION

ON

CRANIOTOMY.

I. IS CRANIOTOMY JUSTIFIABLE ON LIVING CHILDREN? By GEORGE H. ROHÉ, M.D., Baltimore.

II. ITS ALTERNATIVES:

Abortion. By WILLIAM WARREN POTTER, M.D., Buffalo.

Premature Labor. By JOSEPH HOFFMAN, M.D., Philadelphia.

Forceps and Version. By JAMES P. BOYD, M.D., Albany.

The Cesarean Section. By E. E. MONTGOMERY, M.D., Philadelphia, and A. VANDER VEER, M.D., Albany.

Lapara-elytrotomy. By CHARLES A. L. REED, M.D., Cincinnati.

The Porro Operation. By JOSEPH PRICE, M.D., Philadelphia.

III. CONCLUSIONS: A Résumé of the Whole Subject. By WILLIAM H. WATHEN, M.D., Louisville.

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DISCUSSION ON CRANIOTOMY.

I. Is Craniotomy Justifiable on Living Children?

By GEORGE H. ROHÉ, M.D.,
BALTIMORE.

The question, "Is craniotomy justifiable upon the living child?" is one of the most important presented to the obstetrician. It involves the decision of the question whether we have, under any of the circumstances of practice, a right to destroy a human life.

With the legal or theological aspects of the question I will not concern myself, although I believe that neither jurist nor theologian will assume to decide contrary to the opinion of the experienced and conscientious obstetrician.

I do not hesitate to answer the question in the affirmative. In doing so I may, however, be permitted to state my reasons for so answering, and to point out the circumstances and conditions under which, in my opinion, craniotomy *is* justifiable upon the living child.

Statistics, which are so often quoted as conclusive in determining the proper line of action in this as in other surgical problems, may usually be made to support the most diverse claims. Without wishing to brand all statistics as false or valueless, I must confess that in this particular field they are more likely to lead to false than to true conclusions. If, for example, we compare the older mortality records of craniotomy (fatal in more than 20 per cent. of the mothers) with the most recent records of the improved Cesarean section in Germany (fatal to 10.6 per cent. of the mothers operated upon), or even take the record of a single operator, as Zweifel, who has done eleven Cesarean sections without loss of a single mother

or child, we shall be compelled to reject craniotomy in all cases and banish it from the list of obstetric operations. But if, on the contrary, we compare the recent records of craniotomy (mortality of mothers about 5 per cent) with the latest statistics of the modified Cesarean operation in the United States (maternal mortality 78 per cent.), we are forced to the conclusion that the destructive operation is the more conservative one. Neither of these methods of comparison is fair, however, and conclusions drawn from such statistics are false and untrustworthy.

Most obstetricians of experience are unwilling to displace craniotomy entirely by the Cesarean section—the *only* operation that can enter into consideration in most of the cases where the first-named operation is applicable.

If the obstetrician were always consulted in time, so that he could give the case, in all its bearings, careful consideration before labor begins, he would doubtless often decide upon a different course of action from that which he is subsequently forced to adopt. In practice, the consulting obstetrician is rarely called until something has occurred to obstruct the natural progress of labor, and then he is forced to do that which his judgment approves as best for his patient and her domestic relations. To be compelled to decide promptly, as often happens, between the destruction of a living child by craniotomy, or the performance of what is still rightly looked upon as the superlative operation in surgery, is not an alternative to be lightly considered.

The *circumstances* surrounding each case—as the dictionary has it, "the matters attending an action that modify it for better or worse"—must be taken into account before coming to a decision. The condition of the patient, the duration of labor, character of previous labors, degree of obstruction which the operation is intended to relieve, the prospective viability of the child—all these circumstances, and more, demand careful consideration before the character of the operation is decided upon. If the patient is worn out by the length or severity of her travail; if fever or other signs of septic absorption are present; if she has previously given birth to living children; or if the physical signs point to an early death of the fetus even if promptly delivered, Cesarean section is not an operation of election, and craniotomy is the only procedure rationally indicated. Of course, I assume that no physician with any

obstetrical experience would proceed to craniotomy without first trying to effect delivery with the forceps. With this instrument delivery can often be effected in cases where the pelvic canal is much narrower than that generally considered necessary for the passage of an unmutilated child. The cases where podalic version can achieve delivery after the forceps properly used have failed, are, in my opinion, too few to justify resort to a procedure which greatly increases the danger to both mother and child, and unduly complicates, if not successful, the perforation that afterward becomes necessary.

It is impossible to lay down hard-and-fast rules to guide us in an operation where the individual judgment must make the decision; but in a general way it may be stated that a pelvic contraction antero-posteriorly to three and a quarter inches will render the use of the forceps or version futile. Between that measurement and a conjugate of two and a half inches, craniotomy is indicated so soon as a fair trial, by an experienced practitioner with an appropriate forceps, has shown that the child cannot be delivered through the natural passages without mutilation. This condition of things I may be permitted to call the *absolute indication* for craniotomy. When carefully performed under these conditions the maternal mortality is not over 5 per cent., and under antiseptic precautions should be no greater than after delivery with forceps.

When the contraction of the pelvis antero-posteriorly is down to two and a half inches or below, the maternal danger from craniotomy is almost or quite as great as from Cesarean section. In cases presenting these higher degrees of contraction, craniotomy is not justifiable even though the child should be dead. It is only in cases near the border-line, where there is a good deal of space laterally, the child dead, and the mother exhausted and suffering from septic absorption, that perforation of the skull and evisceration may be attempted. Here the Cesarean operation is indicated and should be promptly performed.

Whether sins of commission or of omission are of greater gravity I will not venture to decide. For myself, however, I am willing to assume the responsibility of destroying the life of the child to save that of the mother under the conditions I have endeavored to point out. The practitioner who declines to perforate the cranium of a living child, and fears to resort to Cesarean section, may com-

promise with his conscience by waiting until the child is dead and then deliver by craniotomy. Him I do not envy. The obstetrician who resorts to craniotomy before the child is dead, may be, as I fear it is becoming fashionable to call him, a criminal; but the one who waits for the child to die and then loses both mother and offspring is worse—he is a blunderer!

I may also refer to cases in which the disproportion between the head of the child and the maternal pelvis is not due to contraction of the latter, but to excessive size of the former. In cases of hydrocephalus, for example, sacrificing the life of the child merely anticipates the ultimate result. Craniotomy is, therefore, indicated in these cases as soon as the diagnosis is made, for it is well known that the maternal mortality is high in labors with hydrocephalic children.

Notwithstanding the increasing sentiment in the profession against craniotomy upon living children, I believe it to be unwise to give up this operation until an efficient alternative is proposed, which gives a better promise of life to the mother than any with which we are at present acquainted.

The operation is one of the simplest in obstetric surgery. After evacuation of the bladder and rectum, the vagina is washed out with an antiseptic douche, and the obstetrician's hands and instruments thoroughly disinfected.

An assistant fixes the head by pressing the child well down into the pelvis from above, and the trephine perforator, guarded and steadied by the left hand in the vagina, is applied to the most projecting bone—usually one of the parietals. With the right hand the tube is withdrawn from the end of the trephine and several complete turns given to the handle of the latter. As soon as the scalp is cut through, the handle may be turned backward and forward as in the ordinary operation of trephining. In a few moments the skull will be perforated and the button of bone removed as the trephine is withdrawn. The brain is then broken up with any convenient instrument—a large steel sound, for example,—and the delivery left to nature, or hastened with Meigs's craniotomy forceps. The cranioclast is a cumbersome and unnecessary instrument. Where it is necessary to break up the skull with the forceps, the left hand should be kept in the vagina to guard the latter against laceration as the bones are removed.

After delivery of the placenta an intra-uterine injection may be given if considered necessary, but the antiseptic vaginal douche should never be omitted.

In destroying the brain, care should be taken to penetrate the medulla, otherwise the obstetrician may be confronted with the horrifying spectacle of a living brainless child which he has first mutilated and then brought into the world. The after-treatment presents nothing peculiar.

II. Its Alternatives.

Abortion.

By WILLIAM WARREN POTTER, M.D.,
BUFFALO, N. Y.

In considering the subject which has been assigned me in this discussion, it may not be out of place to indicate my position on the main question. While I believe, in the present knowledge of obstetrics, craniotomy has very little place, yet it is carrying the matter to an extreme to say that it should never be employed. There must come to everyone who practises the obstetric art a time when he must choose from one of several resources to be employed in an emergency. Craniotomy would be, in my opinion, entirely justifiable when the fetus is hydrocephalic or otherwise deformed, in the case of monsters, and in cases where the mother has become too exhausted to warrant the employment of abdominal section.

Coming now to abortion as an alternative resort for craniotomy, I may begin by remarking that it has necessarily a very limited application in the present light of the accoucheur's art. It may be assumed that it is only probably justifiable—(*a*) When, owing to previous difficult deliveries, in which the child was lost and the mother's life endangered, there is necessity of preventing such complications; (*b*) where there is no chance for any of the other alternatives; and (*c*) where the degree of pelvic contraction is so great that premature labor will give little or no expectation for the child's life, and future abdominal section will not be consented to. The dangers of abortion, unless carefully performed under the strictest antiseptic precautions, are almost as great, if, indeed, not equally so, as the more serious surgical interferences. Thus, it may happen that an operation, which is done to obviate the necessity of a capital procedure, will possibly finally eventuate in the performance of such operation. If pregnancy occur in a case where the condition of the woman is such that it is not possible to remove any

obstacle to completed gestation, and her state is, in other respects, such that the progress of pregnancy will endanger her life, of course, there remains nothing to be done save to induce abortion. We may justly affirm that there is nothing left for such cases as these, in the great majority of instances, only an excuse for the induction of abortion.

Having determined to make the operation, it remains for us to consider the best means to employ: 1. It should never be invoked without competent counsel. 2. Antisepsis is first and last to be strenuously insisted upon 3. The vagina must be clean, and the instruments must likewise be scrupulously clean. In general, I have very little use for a uterine sound; but here lies its appropriate field, and, probably, our best means for the production of early abortion abides in the judicious employment of this otherwise generally useless instrument. Its flexibility commends itself to the operator, for it can be shaped so as to take the uterine curves without doing violence to the structures. Introduced carefully until the fundus uteri is reached, it may be delicately turned or entirely rotated with all gentleness, and the woman meanwhile kept absolutely at rest. Antiseptic douches are to be insisted upon, and when the embryo is discharged it must be carefully examined to determine whether or not it is entire. If not, the uterus is to be curetted.

Premature Labor.

By JOSEPH HOFFMAN, M.D.,
PHILADELPHIA.

The value of induced premature labor as an alternative to craniotomy in otherwise impossible labor, is significant in that it can only indirectly, in cases in which it is applicable, militate against the life-chance of either mother or offspring. So far, then, as a life-saving procedure, it takes precedence of all other methods of either minor or major obstetrics. When we say that it can only indirectly endanger the life of either mother or child, the explanation is almost gratuitous that sepsis, by criminal carelessness, may be the mother's risk, while any one of the common accidents of labor may afford a greater risk than ordinary to the child, because of its diminished viability,—the earlier the labor is induced the greater being the risk.

If we consider briefly the history of this now universally commended procedure, we shall find it at first by some barely given a place in legitimacy, tardily accepted in Germany, and violently opposed in France. Tyler Smith early urged it as one of the expedients by which the then frightfully abused operation of craniotomy might be abolished in England. Opposition to it in France was, I believe, frequently due to religious scruples of the gnat-straining, camel-swallowing variety, such as are now frequently bivouacked round the prurient desire to perform Cesarean section. The operation *per se* is not to be considered dangerous, and is to be looked upon not only as an alternative of craniotomy, but as an escape from the graver operations of Cesarean section, the Porro- and gastro-elytrotomy.

Whatever successes these may record, they neither individually nor in the aggregate can fall within the province of the general obstetrician. They are operations of technique, and success in their performance must depend on personal adaptiveness and special training. Here it is evident the simpler technique of the premature

induction of labor must afford a greater scope for the average obstetrician.

A word here as to the value of statistics in deciding the merit of this operation as a life-saving, danger-avoiding procedure. Statistics of any kind to be valuable must be homogeneous; simply lumping incongruous cases where neither maternal nor fetal conditions bear any similarity whatever, can teach nothing. Not only must the degree of pelvic deformity be duly considered, but also the lines of deformity. In this connection the investigations of Litzmann and Spiegelberg are especially valuable, as are those of Dohrn.[1] The indications for the operation may have relation either to the mother, the child, or both.

In general terms, we resort to it when it is ascertained that at full term there will exist a marked disproportion between the fetal head and the maternal pelvic diameters, or when obstructions, either pelvic or uterine, are of such a nature as to be practically insurmountable at full term. An indication, not to be considered here, is the induction of labor prematurely on account of poor health in the mother.

When the head of the child is found to be habitually large or superossified, an indication for the operation looking to the best interests of both mother and child is supplied.

Puncture of the membranes, while certain to bring on labor, is often slow, and has the disadvantage that when uterine contractions set in they are expended directly upon the fetus, thereby diminishing its viability, already found to be lower than the average. *The administration of oxytocics* also presents the same disadvantages.

Abdominal friction, *irritation of the mamma*, and *galvanism* are not uniform in their results, and are likely to impress the patient unfavorably and frequently disappoint the obstetrician.

The application of alternately hot and cold douches is slow in its results, the average time elapsing before labor sets in being four days. Where time is urgent it is evidently useless. *The injection of carbonic acid gas*, like the injection of fluids into the uterus, should be condemned.

The trouble with inducing premature labor is, that the discovery of the condition that necessitates it is made when it is too late, so

[1] The statistics of these authors are also given, *in extenso*, by Prof. Lusk in his excellent book, pp. 496, 497.

that premature labor cannot be advantageously induced. In considering the relative indications, in the first place, the age of the child is to be considered. If we cannot bring labor on previous to six and one-half months—the object being to save the life of the child—it is not worth trying. That is the limit of time. After this the period of induction must be fixed according to the measurements of the pelvis. Those tables are a matter of statistics. The tables of Kiwisch—in which a time-value is recorded for the varying relations of the fetal head with the pelvic diameters—afford excellent data upon which to act. So far as the relative indication for inducing premature labor is concerned, it must relate to two things, the age of the child and the size of the pelvis. Then comes the consideration of the methods. Many have been tried. What we want is to use a method not dangerous to the child or to the mother. The most serious objection is to be made to any and all attempts that would inject fluids into the uterus. Such practice is most reprehensible. Under no circumstances, I take it, is it allowable. *The introduction of Barnes's dilators* is another method. The dilator to be used is of different sizes, and necessitates a great deal of manual interference and is not always satisfactory.

The two things usually recommended are the introduction of either a hard or a soft bougie. The hard metal bougie is objectionable, because if bichloride is used the instrument becomes corroded. In addition to this, with the woman lying on her back, the instrument is apt to make painful pressure. Again, the hard instrument tends, by its own weight, to gravitate out of the uterus. The ordinary bougie is usually too short. The penetration of the bougie in the body of the uterus should not be less than seven inches. The further it can be gotten up into the uterus the more certainly labor will be brought on. Another objection to the hard bougie is that the membranes are apt to be ruptured. Since the operation is for the benefit of the child this is to be considered. So, then, we come at last to the use of rubber bougies. Introduced carefully, with the wire director which is usually found in them, it can be brought safely to the uterine fundus and there left, usually bringing on labor within a few hours. If required, a second bougie may be introduced.

If necessary, the vagina can be packed, and the packing itself

will tend to bring on uterine contraction. The whole operation is brought down to a very simple procedure, determined in its application as to time by the relative proportions of fetal head and maternal pelvis. The capital operations are both the Porro and Cesarean section, and are dangerous compared with it. I myself should prefer in all cases that the simpler operation should be done, if possible. I have had two cases under my knowledge, in one of which Cesarean section was recommended, but got no further. The woman was scared, and, as the result, sought other counsel. She had had one child born after a very difficult labor. She had had three children craniotomized, and this, the fifth, was born without forceps, by my bringing on premature labor two weeks before full time. The second case was a woman in whom the Cesarean section was performed, although premature labor was perfectly practicable. She had had one child born living, with instruments. The second child was born without instruments, and, although she had a slightly contracted pelvis, it was considered desirable (from a professional standpoint) to perform the operation in the third pregnancy, and she was induced to risk the operation, and it was done. The baby lived about ten months, and then died, showing that the operation subjected the woman to great danger without any commensurate advantage.[1] When we are able at all to get hold of these cases of contracted pelvis where there have been difficult labors or where shortening labor is desirable for any cause, its early induction affords the safest and simplest means of giving both mother and child a living chance.

It is scarcely necessary to add that strict antisepsis is to be observed from first to last.

[1] Since writing the above the same woman has been delivered successfully by induced premature labor.

Forceps and Version.

By JAMES P. BOYD, M.D.,
ALBANY, N. Y.

The degree of shortening in the conjugate diameter of the superior strait is generally regarded as of the highest importance in determining the method of operation in the contracted pelvis. Based upon this measurement, in the works of well-known obstetric writers we find the following rules: that when the conjugate diameter of the brim measures three and a half inches and upward, the proper mode of delivery is by forceps; if the conjugate of the brim is between three and a half and two and three-quarters inches, version is the preferred operation.

But we cannot depend solely upon the length of the conjugate in the selection of a mode of procedure. There are other considerations upon which the selection must depend aside from the number of inches in a given pelvic diameter. The shape of the pelvis; the site of contraction, whether at brim, cavity, or outlet; the size of the fetal head; its degree of ossification; the position of the head; the condition of the os uteri; amount of retraction of the uterus; history of former labors; the number of previous deliveries; the presentation and position of the child; the existence of complications; and, lastly, the dexterity of the operator. These are some of the conditions upon which the selection of a method of delivery must of necessity rest. The size of the fetus will often determine the method of operation.

Schroeder and Balzer have found a progressive increase in the size of the head after the third birth. Schroeder observed that the head of a firstborn is susceptible to much greater moulding than the heads of children born subsequently.

La Torre, in an article relating to the influence determining fetal development, asserts that the degree of fetal development depends largely upon the health of the father; if he be healthy, the size of

his head and shoulders and his stature decide the corresponding peculiarities of the fetus. The weight, stature, and health of the mother exercise a comparatively slight influence upon the fetus.

In the moderate degrees of deformity, as in pelves with a conjugate at the brim of three and a half inches and upward, the forceps may be used with safety. In many of these cases labor may terminate without operation. If the head has engaged, although high, the forceps may be used successfully. If, however, the head is movable above the brim of the pelvis, then version is the safer operation, especially when the membranes are unbroken and os uteri not sufficiently dilated to render forceps advisable.

On account of the careful study of the principle of axis-traction of late years, many changes have resulted in the management of cases where the head is high in the pelvis, and even above the brim. With the aid of the axis-traction forceps it is now possible to deliver the head presenting at the brim with comparatively little risk.

The teaching of the French schools of late years seems to favor the performance of external cephalic version and termination of the labor by the high forceps operation, in many cases where formerly the podalic version was preferred.

In Germany, version is the favorite operation, undoubtedly due in a measure to the views of Schroeder upon this point. According to this author, an antero-posterior diameter of 3.7 inches generally permits delivery spontaneously; for a less degree of deformity he rejects the forceps even in tentative tractions, advises version, and when the conditions are not favorable for version, Cesarean section or craniotomy.

There is still, however, considerable difference of opinion amongst obstetricians regarding the merits of the two operations, forceps and version, in cases of minor degree of deformity. A conjugate of two and three-quarters inches (seven centimetres) may be considered the lowest limit of version. As the chief cause of danger to the mother after the performance of version is septicemia, only by strict attention to antiseptic measures can favorable results be attained. When the conjugate of the brim then measures between three and a half and two and three-quarters inches, version is clearly indicated and the forceps becomes dangerous.

In order, however, that the operation of version may be successfully carried out, the contraction should be limited to the pelvic

brim, and there ought to be room enough in the transverse diameter.

The advantages of version in contracted pelves are mainly dependent upon the fact that the after-coming head passes more readily the contracted brim than the normal head-first presentation. This is due to the entry of the head by its small bi-mastoid diameter. Tractions upon the trunk of the child bring to bear pressure upon the head from many points in the pelvic walls. The bulk of the head is still further diminished by an overriding of the bones at the sagittal suture. By pressure above the symphysis pubes the head is gradually flexed and forced downward.

According to Cameron, of Montreal:

> In England and America deformity of the pelvis is far less common than on the Continent, and dystocia is more frequently due to impediments at the outlet than at the brim. Hence, except among the immigrant population, version is comparatively rare, while forceps is used so frequently that America has been styled the home of the low-forceps operation.

The child is exposed to many dangers during the operation of version. C. Ruge has observed the following lesions as a result of the extreme traction-force necessary to bring the head rapidly through the narrow brim—fracture of the clavicles, fracture of the humerus, laceration of the sterno-cleido-mastoid muscles, rupture through the substance of a vertebra, extravasations of blood into the cavities of the head and trunk, separation of the condyles from the occiput and of the squamous portion of the temporal from the parietal bones, fractures and depressions of the skull, and rupture of the sinuses of the dura mater.

Dohrn calls attention to the depressing influence exercised upon the fetal heart by pressure brought to bear upon the base of the brain.

If we now turn to the forceps, we find that the injuries to the fetus by this instrument have not been very thoroughly studied. Among the injuries which have been described are fissures in the fetal scalp and depression of the bones of the skull.

Lomer, in twenty-seven cases of fracture of the skull by forceps, found the lesion most frequently in the frontal bone; in six cases the sagittal suture was ruptured, and in four the lambdoid.

Gowers describes cerebral palsies following difficult labor, gener-

ally accompanied by extravasations of blood upon the surface of the brain, ending in death or tedious recovery.

Osler reports nine cases which he has personally observed of children delivered with forceps and palsied. In this connection it is interesting to note that Osiander and Carl Braun describe fissures of considerable depth on the heads of newborn children following easy delivery.

The Cesarean Section.

By E. E. MONTGOMERY, M.D.,
PHILADELPHIA,

AND

A. VANDER VEER, M.D.,
ALBANY.

Dr. Montgomery:

No question seems more appropriate for discussion in this Association than the one before us. Other subjects are of interest from the influence their decision may have upon the health or lives of the individuals affected, but in the discussion of the one now under consideration, we have the lives of two individuals under consideration, the fate of one of whom almost absolutely depends upon the procedure accepted.

For craniotomy it may be pleaded that it had, above all other operations, the justification of antiquity for its performance. Back in the early ages of the development of the obstetrical science, the attendant was confronted with the woman unable to deliver herself, and the sacrifice of the child was accepted as the escape from an otherwise insuperable difficulty. A review of the evolution of the science demonstrates that every step in advance has been aimed at an escape from the necessity for such a sacrifice.

The inherent right of every individual, whether born or waiting to be born, to a chance for life, has through all ages been a recognized principle in morals, religion, and science. With increasing civilization, under the teaching of Christianity, this idea has been more and more emphasized. "Thou shalt not kill" has rung out through the ages, and continually confronted him who, to save the mother suffering, would have needlessly sacrificed the offspring. Science has been continuously besought for measures to decrease the frequency or preclude the necessity for the sacrificial operation. Thus, we have had Cesarean section, forceps, version, premature

labor, and other alternatives instituted. So long as the Cesarean operation was attended with an exceedingly small percentage of recoveries, it was but natural and right that the physician should favor that operation which was attended with only a slight maternal mortality; but, now that the refinements of abdominal surgery have developed procedures which give the child every opportunity for its life, at a very small increase of risk to the mother, over one which was absolutely fatal to the former, the attendant is justified in demanding that the mother accept the increased risk. It may seem unreasonable that the woman should be thus condemned to suffer for a condition of which she was ignorant, and for which she is not responsible; but, on the other hand, the child is not the aggressor; the mother has consented to the conditions which have brought it into existence, and is under moral obligations to afford it an opportunity for its life. It has been said that the patient will not consent to laparatomy, knowing that she may be delivered by the sacrifice of the child, and if we do not accede to her wishes, our patient passes into the hands of some one who is less scrupulous. But should such an argument govern a conscientious and scientific physician? Would not the same course of reasoning lead him to perform abortion when it is inconvenient for the patient to carry the fetus to full development? Has the patient a right to demand that the offspring of her body shall be sacrificed when it can be delivered alive with but slightly increased risk to herself? Can the physician afford thus deliberately to take the life of an individual, at the instance of another, when both lives might be saved? More creditable would it be to follow the example of Dr. Meigs with Mrs. Reybold, after he had twice delivered her by craniotomy, and say, "I will murder no more children for you." Fortunately, she fell into the hands of a man equally scrupulous, by whom she was taken to Gibson, who twice delivered her by Cesarean section, thus affording her children and grandchildren to support and solace her old age.

In a paper entitled "Is Craniotomy Justifiable?" read before the Philadelphia County Medical Society, in 1883, I claimed that as there was but little more than $\frac{3}{4}$ inch between the conjugate of $2\frac{1}{2}$ inches, below which it was acknowledged that Cesarean section afforded an equal, if not better, chance for the mother, and the conjugate of 3.25 inches, the maximum diameter in which craniotomy

was supposed to be necessary, we had reached a period at which we were justified in abolishing the murderous operation of craniotomy from the elective procedures while the child is alive. With the later developments in abdominal surgery, we can not only afford, but it is absolutely incumbent upon us, to urge strongly this dogma. With the proper teaching of the management of pregnancy; with increased accuracy in pelvic measurements, and greater facility in the diagnosis of the relative position and size of the fetus, by external manipulation, the cases in which we will have to resort to such extreme measures will be greatly decreased. To obtain such knowledge would require the obstetrician to acquaint himself with the state of his patient's pelvis and her general condition early in her pregnancy, so that proper measures may be instituted for such relief as may be indicated.

To denounce the operation upon the living child, does not mean that the attendant may temporize until the child is surely dead and then perform craniotomy. Such a course, endangering the mother's life as well, would be more culpable than to proceed at once to the sacrifice of the child. Rather, his knowledge should be sufficient to enable him to decide the probable necessity of the case, and, if the diameters are so small as to preclude the delivery by forceps or other less grave alternatives, to proceed while the patient is in good condition to perform the Cesarean operation.

In considering statistics, we recognize that all the children are sacrificed in craniotomy, and, in addition, that in a large series of cases not all the mothers are saved, consequently the mortality of the operation must be more than 50 per cent. of the lives affected.

Wyder (*Arch. f. Gynäk.*, 88, xxxii. 1–96) reports 168 cases of craniotomy, with a mortality of 14.3 per cent., or, excluding cases in which it was evident the operation was a forlorn hope, a mortality of 8.3 per cent. For the Berlin, Halle, and Leipzig clinics, we have a mortality of 5.6 per cent. In other words, out of every 100 cases of craniotomy (Wyder) there were 108.3 lives lost, to 91.7 saved. In the clinics of Berlin, Halle, and Leipzig, 105.6 lost, to 94.4 saved.

From the statistics of Cesarean section it is difficult to eliminate the cases in which the deathbed was made the scene of surgical display. As Dr. Harris justly says, the Cesarean operation was

often done because it was evident the patient would not outlive craniotomy.

Thus, in America (Harris, *Med. News*, '87, li. 413) 153 cases have been operated upon with 56 recoveries, a mortality of 63 per cent. That this frightful mortality is due to want of appreciation of the importance of early action is evident when we compare it with German results, where 80 cases were done by thirty-eight operators with but 12 deaths, a maternal mortality of 15 per cent. If additional evidence were needed to confirm the assertion that the present mortality is due to failure to operate promptly, we need but direct attention to the cases in which the uterus has been ripped open by cattle; of 9 women so delivered 5 recovered, and 4 children lived. More effective evidence still is that of the 6 cases of self-inflicted operation, where 5 out of 6 recovered. Less than 17 per cent. mortality for self-inflicted operations, with 63 per cent. mortality when done by the profession, conclusively demonstrates that we have permitted the favorable time to pass, in the vain effort to accomplish delivery by some other method.

How could we hope for better results when our instruction has been such as mine—which was, first to try the forceps; if unsuccessful, do craniotomy; failing in that, perform Cesarean section. Necessarily the patient would be *in extremis* when the time came for the latter operation.

It must be remembered, also, that many of the operations accredited to this country were done by the old method, in which death was frequent from hemorrhage or sepsis following gaping of the uterine wound.

The great mortality of the old Cesarean led to the introduction of the Porro operation, in which the danger of hemorrhage and sepsis was sought to be avoided by the supra-vaginal removal of the uterus. For some conditions this is a most desirable operation, particularly where the uterus is much bruised and macerated by a long labor; in septic conditions of the utero-vaginal canal; in parturient fever, metritis, vaginal atresia, or where the superior uterus is the seat of myomata. The disadvantages are, that it removes the power of procreation, requires a prolonged convalescence, and is attended with too large a percentage of mortality to make it acceptable. The gaping of the wound referred to permitted the discharge of the contents of the uterus into the cavity of the peritoneum, de-

veloping sepsis and causing death in the majority of cases. To obviate this, Sänger suggested that a wedge-shaped piece of the muscular wall on either side of the wound should be removed and the peritoneal flaps thus formed be brought together by sutures. Later, it was found unnecessary to remove the wall, but the sutures were so introduced as, first, to approximate the muscular walls, and second, to bring in contact the peritoneal surfaces over this line. This procedure, known as the Sänger or improved Cesarean, is the recognized operation, and the one we would most earnestly recommend in place of craniotomy upon the living child.

As we have already seen, craniotomy is attended with a mortality of 53 per cent. of the lives involved, while the Cesarean operation, under similar circumstances, has a mortality of but 7.5 per cent. of the affected lives.

Should not such an unequal mortality rate induce us to renounce craniotomy when the child is alive? The advocates of craniotomy, however, ignore the child in their anxiety for the mother, and say that it is a mere vegetative existence whose probabilities for life are uncertain. Have we the right to set aside the claims of the child for life? Who can predict the possibilities of the unborn fetus? The history of the world has demonstrated that genius is not hereditary, and we cannot foretell of what possibilities we rob the world by plunging our instrument into the brain of an unoffending child. Is the Cesarean operation the best method of procedure? In some cases it is the only procedure; in others, it is less favorable than the Porro operation. In the cases in which we can elect the time of operation it is the preferable procedure. I cannot better present the position of the Cesarean and Porro operations than in the following communication very kindly sent me by Dr. Harris, whose statistical knowledge of the subject exceeds that of any other author:

"The Relative Status of the Porro-Cesarean, and Sänger-Cesarean Operations.

Porro operations in 15 countries,	267;	women lost 121;	children dead or dying,	49
Sänger " 11 "	196;	" " 48;	" " " "	17
Porro mortality,	1 in $2\frac{1}{5}$			
Sänger "	1 in $4\frac{1}{12}$			
Porro operations of Italy,	92;	women lost, 44;	children dead or dying,	14
Sänger " of Germany,	92;	" " 13;	" " " "	8

Porro operations of Vienna,	37;	women lost, 18;	women saved, 56	per cent.
Sänger " " "	14;	" " 1;	" " 92$\frac{8}{7}$	"
Porro operations of Austria,	61;	women lost, 18;	women saved, 70½	per cent.
Sänger " " "	32;	" " 6;	" " 81¼	"
Porro operations of Germany,	41;	women lost, 21;	women saved, 48¾	per cent.
Sänger " " "	92;	" " 13;	" " 85½	"
Porro operations of the United States,	9;	women lost, 7;	women saved, 22$\frac{2}{9}$	per cent
Sänger " " " "	33;	" " 18;	" " 45$\frac{15}{33}$	"

Sänger operations in Dresden	under 6	operators,	31;	women saved,	27		
" " " Leipzig	" 6	"	20;	" "	18		
" " " Berlin	" 5	"	8;	" "	7	Loss 8 women, or 1 in 9$\frac{1}{8}$	
" " " Vienna	" 6	"	14;	" "	13		
			73		65		

"Mr. Lawson Tait's preference for the Porro operation is based upon a personal experience which is quite different from that of Continental operators. He says that he performed the Cesarean operation four times and lost every case, and the Porro operation as many times without a death. As he has given the particulars of but one (a Porro) operation out of the eight, we are left in ignorance as to the prior condition of the women upon whom his four Cesarean sections were made, and his method of closing the uterine wound. Mr. Tait is certainly not wanting in skill, and there must be some other reason for his failure, when Dr. Korn, of Dresden, has saved seven Sänger cases in order: Prof. Zweifel, of Leipzig, seven out of eight; Dr. Sänger five in order; and Prof. Gustav Braun, of Vienna, also five. As the last operator lost five Porro cases out of seven, two of them by dropping in the stump, and has not for a long time tried the Pavian method, he probably prefers the Leipzig operation as the safer of the two.

"The Sänger operation has the more rapid convalescence of the two. I have known a woman travel two hundred miles on the nineteenth day after her operation, without injury.

"It has the advantage that it does not unsex the woman, and does not leave her with an in-drawn abdomen.

"The Porro operation is of advantage in cases of malacosteon, as it will sometimes cure the disease.

"It is preferable where the fetus is dead and putrid, as it removes the uterus with its septic contents.

"It may be worthy of preference where the woman is unmarried; but the sterile result may be more safely obtained, in some cases, by ligating the Faliopian tubes, as was done by Lungren, of Toledo (1880), and Champneys, of London (1888), with entire success.

Yours truly,

ROBERT P. HARRIS.

September 4, 1889.

We believe that the history of the development of the science demonstrates:

1. That craniotomy, as an elective operation on a living child, is unjustifiable.

2. That in cases in which the condition has been overlooked, and the woman comes to full term with a pelvis contracted sufficiently to preclude the delivery of a living child *per vias naturales*, the Cesarean operation should be performed.

3. The improved Cesarean operation, barring exceptional cases, is preferable to the Porro.

4. It should be done, where possible, prior to the beginning of labor, and under aseptic precautions.

The Cesarean Section.

Dr. Vander Veer:

The discussion of the Cesarean section as an alternative of craniotomy on the living child, is inseparable from the other surgical procedures designed for the delivery of a living child—the operations of Porro and Thomas. As an abdominal surgeon, one is bound to be conversant with each of these varieties of procedure, and the special indications for the employment of each. Poorly equipped is he who has but one resource in the treatment of cases where supra-pelvic delivery is demanded. Hence, if in the discussion of Cesarean section I should refer to the other methods of treatment which have been assigned to so capable gentlemen as Drs. Reed and Price, I hope I shall be pardoned.

Cesarean section is an operation of great antiquity, reaching so far into the past that its origin is obscure. It has been self-inflicted by those suffering the pangs of labor. The goring of horned cattle has been responsible for Cesarean section in eleven cases. It is performed by the native surgeons of tribes of Africa, as well as by the surgeons of all civilized nations. If horned cattle could be prevailed upon to exercise more care in the selection of their cases, and to declare the special indications which have hitherto led to the operation, it might be well to encourage them, for Dr. Harris has shown them to be exceedingly fortunate in their results. The so-called classic Cesarean section will be carefully avoided in this discussion, believing that the improved operation of Sänger and others has been of great advantage in the technique of the operation.

In 1870, Prof T. G. Thomas revived the procedure developed by Jörg, Ritgin, and Sir Charles Bell, because of the great mortality of the Cesarean section. Prof. Porro, of Pavia, from the same motive as Thomas, designed and for the first time employed supra-vaginal amputation of the pregnant uterus, or Porro's operation. The advancements in abdominal surgery made in the past

decade have been of incalculable advantage to humanity, but there are yet certain elements which need to be brought more closely and persistently to the attention of the profession at large, among these being the question of the time for operation. Nothing has contributed so much to the high rate of mortality, after Cesarean and other of the major abdominal operations, as procrastination. Being the handmaid of Nature, two or three attempts at version or craniotomy, two or three long-drawn-out consultations, "waiting for better light in the morning," and other similar pretexts, have sent more than one unfortunate victim to an untimely grave. Teachers and writers must keep constantly before the profession the necessity for speedy interference, the propriety of early consultation, if necessary and possible, with able men of positive convictions, and decide on one, not many plans of treatment, and immediately carry it into effect. Then, and not till then, will many of the more fatal abdominal operations be placed upon a sound basis. Then the histories of patients "moribund," "very much exhausted," "very feeble at time of operation," will not occur, and unfortunate results will not be so frequently recorded.

With very few limitations, if any, I am of the opinion that the destruction of a living child by craniotomy or embryotomy is unjustifiable. It is true that cases of dystocia which, in order to be terminated, will require surgical interference, oftenest occur among those women that seldom employ an obstetrician until the onset of labor—if, indeed, they are not left entirely to the care of ignorant midwives. Because of this, induction of premature labor cannot be brought about. Again, there are cases where contraction and distortion of the pelvis are so great that craniotomy is dangerous, even more dangerous than Cesarean section (see statements of Drs. Bayo and Harris).

The *American System of Obstetrics* gives a *résumé* of 149 cases of the improved Cesarean section, saving 108 women and 136 children (the fate of 3 children not stated). In Germany, where surgeons are nothing if not technical, 80 operations with 12 deaths have been reported. Austria, 17 cases, with 12 women and 15 children saved. We have been in America, so far, less fortunate—22 cases, with a loss of 13 women, but only 3 children. By comparison, the Porro operation and its modifications has been done 232 times, and in every country has been much more fatal than

the Cesarean section. In England the Porro operation, owing to its enthusiastic advocacy by Mr. Tait and others high in authority, is in the ascendancy. They have been especially fortunate in their results. Lapara-elytrotomy has been done fourteen times, eleven in America, twice in England, both fatal, and once in France, also fatal. Seven mothers and seven children survived the operation. Five of the cases that recovered were favorable for any operation, two were unfavorable. The causes of death following lapara-elytrotomy have been shock, peritonitis, septicemia, and in five cases wounds of the bladder occurred as a complication. The causes of death following Porro's operation were shock, hemorrhage, peritonitis—in all respects similar to the causes following the Cesarean. Regarding difficulties of the technique of the operations, there is no great difference. The difficulties of one are counterbalanced by difficulties of the other. However, for the unequipped the Cesarean would doubtless prove the easiest to perform, but there are already so many good abdominal surgeons that they are accessible in all parts of the country. In any of the operations great manual dexterity is required. The range of the applicability of the Cesarean is of all the greatest, followed by that of Porro, with lapara-elytrotomy in the least range of usefulness. The avowed purpose for which the operations of Porro and Thomas were instituted—*i. e.*, the lessening of the mortality of supra-pelvic delivery,—has failed to meet the expectations of their advocates. Probably lapara-elytrotomy will soon, if not already, be replaced by either the Cesarean section of Sänger or the operation of Porro.

I predict that another decade will have relieved Cesarean section of many of its terrors; that the mortality will not be greater than 15, and maybe less than 10 per cent.; and these results will be attributable to a livelier interest exhibited by the profession at large to improvements in the technique of the operation, and withal a more skilled class of operators.

Lapara-elytrotomy.

By CHARLES A. L. REED, M.D.,
CINCINNATI.

Lapara-elytrotomy was born of two ideas: the first was that the living, unborn child has rights which the obstetrician is bound to respect; the second idea is the one which has not lived so long as has the first, and was the bugbear which obtained as to the sacredness of the peritoneal cavity.

We all remember the era of abdominal surgery, not long since past, when the dictum went forth from those high in authority, that the treatment of perforating wounds of the abdomen should consist in sealing the wound and leaving the patient to fate. That time has passed, and it has passed because such progressive, such aggressive men as Tait and his coterie, whose influence extends not only over England but America, together with such men as Sänger and his followers on the Continent, have demonstrated the fact that the peritoneal cavity can be invaded with comparative impunity. The first idea, therefore, which prompted the procedure of Thomas, still obtains, namely, that the living child should, if possible, be delivered alive. The second idea has ceased to be of force in the practical surgery of to-day, because we invade the peritoneal cavity with a greater degree of impunity than formerly.

The operation of Thomas consisted in making an incision along the line of Poupart's ligament, lifting the peritoneum, and opening the vagina just below the cervix—a tear rather than a cut—and delivery was effected through this incision. By this manipulation the peritoneal cavity was not opened. The operation was devised by Thomas, repeated by him, adopted by Skene, and repeated in the hands of several other operators, not the least distinguished being our honored president in association with Prof. Dandridge, of this city.

I will not detain you with the statistics of the operation. The

technique is comparatively simple. I have not adopted this operation in obstetric practice. I have done the modified operation, however, for the relief of pelvic abscess, in my early surgical work, when I desired to avoid the peritoneal cavity. I have even gone to the extent, in two cases, of making a counter-opening into the vagina. It is comparatively simple, however, in theory, though the obstetric conditions vary largely from the non-puerperal condition. It is extremely difficult, in making this section, to know just when you are encountering the bladder, because it is compressed between the impregnated uterus and the other parts; and this condition is further aggravated by the progress of labor which has gone to the extent, generally, of dilatation of the cervix at the time of the operation. The ureters, also, are usually compressed. There is another objection to the operation, namely, that it is not generally undertaken until the third stage of labor, when the uterus has perhaps thoroughly exhausted itself. By the operation of Thomas we have no means at all of determining the condition of the uterus. If we perform the Cesarean operation, we may not only ascertain the condition of the uterus, but, if necessary, we can ablate that organ.

The Porro Operation.

By JOSEPH PRICE, M.D.,
PHILADELPHIA.

The true Porro operation is, as we know, the Cesarean section, to which is added the removal of the uterus. At first sight, it might be considered that to perform the Porro operation is to add one capital procedure to another, thus enhancing the dangers and the difficulties, and accordingly increasing the mortality. This is not true, for, by removing the uterus, we take away from the Cesarean section the most important factor in its dangers—that is, the succulent uterus with its incision. Another way of stating the argument is, that the operation is simply a supra-vaginal hysterectomy, with the complication of pregnancy, instead of that of a fibroid tumor. In my paper on "Supra-vaginal Hysterectomy," I endeavored to show that an uncomplicated operation of this sort, with the extra-peritoneal treatment of the stump, is, under the improved technique, an operation of comparatively little danger. The later operations in Philadelphia alone have gone far to make this position tenable. The operations in the hands of other skilful men also confirm the statement. The results of men without the abdominal instinct have no right to be considered.

Now the complications of hysterectomy, when they involve no important viscus, but are limited to simple adhesions, with intelligent drainage, are not to be feared. I wish to call your special attention to these points in detail, because I intend to use them comparatively. In the Cesarean section the danger of hemorrhage as an ever-present menace is not to be denied. Of course, it can be controlled, but it is present, nevertheless. In the Porro operation the uterus is strangulated at once, thus obviating this complication. Now, as an operative procedure, compared with the Cesarean section, the Porro operation clearly has the advantage in these essential points: first, in the absence of danger of hemorrhage; second, in

the extra-peritoneal treatment of the cut uterus; third, in the rapidity with which the operation can be completed. It appears, also, that even with the bettered results of hysterectomy, the Porro operation ought to surpass them for the following reasons: first, there are no complications of adhesions; second, there is no implication, either directly or indirectly, of any important viscus, and, accordingly, there is less hemorrhage; third, there is less shock. So far as the technique of the operation is concerned, it is less complicated than that of the simple Cesarean section, and in its complications far less formidable than the average hysterectomy. The suturing of the uterus, as necessary in Cesarean section, prolongs the operation and imposes a time consideration that is of vast importance in all abdominal operations. The factors of uncertainty in the healing of the uterine incision contradict, and in great part negative, all our established ideas of exact surgery. We have here an incision which it is impossible to put at rest. The tissue within the embrace of the ligature is not at rest. The uterine tissue itself is not stable, but is undergoing metamorphosis and degeneration. A suture such as this in any other part of the body would be unthought of by the intelligent surgeon. It is only tolerated here because it is the best that circumstances and anatomical surroundings will permit. Under such conditions the dangers of leakage and peritonitis are always present in no small degree, and cannot be minimized. This is not true of the extra-peritoneal treatment of the succulent stump. Here the use of the serre-noud is the ideal treatment, because it adapts itself to the conditions, in that it can be contracted upon the shrinking stump, and the hemorrhage absolutely controlled.

The operative side of the question has thus been conclusively dealt with, I think, and the showing is not unfavorable to the Porro operation. There remains to consider the ethical or, if you please, the sociological side of the question. First, the interests of society in general: when we remove the uterus, we sterilize the woman. Have we a right to do so? To answer this we must ask in what light is the pregnant woman to be considered? Is she to be simply regarded as a propagating organism, whose life is in no wise to be considered apart from her procreative power, to which all else must be sacrificed? Are her relations to family and friends of no account compared to this? Is the Cesarean section, which gives her a pos-

sible chance for future childbearing to the detriment of her present family, to be preferred to the operation which gives her the best chance for future usefulness apart from childbearing? Before we answer these questions, the subject must be looked at from the standpoint of the children delivered by Cesarean section. It must be remembered that the dangers of childbirth are here enhanced, and the chances of living greatly diminished. If we then choose the Cesarean section in order to permit future childbearing, we are doing so with a knowledge that we are subjecting the mother to its perils, without reasonable assurance that this can be compensated for by the value of the life of her child. Mathematically, we are substituting a variable for a constant. The logical deduction from the last statement is, that with a dangerous operation we are not justified in exposing the mother again to its perils, when the ends attained are in no wise certain to be what is desired.

In other words, the Porro operation, skilfully performed, is safer than the Cesarean section, and practically leaves the mother, so far as the ultimate results are concerned, in the same relative position to the community as a childbearing agent.

This answers the first series of questions; for if, with less danger to herself, she is left in the same relative position, it is her right to demand, and the surgeon's duty to perform, the operation which will preserve her usefulness to her family and the community.

I subjoin the following statistics for reference:

Porro, 9 deaths in last 50 operations: 12 children lost in 81 operations.—*British Medical Journal*, March 30, 1889.

Last four years Porro mortality 19 per cent.; Sänger, 26 per cent.—*British Medical Journal*, April 13, 1889.

Conclusions: A Résumé of the Whole Subject.

By WILLIAM H. WATHEN, M.D.,
LOUISVILLE.

In closing this discussion I will limit my remarks to a few of the important facts bearing upon the question of craniotomy and some of its alternatives, and will give reasons why embryotomy on the living child is not justifiable; I will also suggest the alternative that may be substituted to meet the conditions of any particular case.

Craniotomy is of great antiquity, antedating the time of Hippocrates, and it was probably practised by the Egyptians during the reign of the Pharaohs; it is an operation that has generally been championed by ignorance and often practised with seeming brutality. Fortunately, with the advance of the science of obstetrics and other collateral branches, a more general diffusion of knowledge, and a more correct appreciation of our moral and professional responsibilities, the medical profession now recognizes that the field of embryotomy is curtailed; and the tendency of science is to eliminate this operation on the living child from obstetric procedures. I believe that the alternatives—abdominal section, induction of premature labor, etc.—will give results that will justify its total exclusion, but this presupposes that these operations should be cases of election, and not done as a last resort. Unfortunately, the statistics of embryotomy have not been carefully or correctly kept, and we are unable to get at accurate conclusions as to its probable mortality, compared with the mortality shown by the more carefully prepared statistics of abdominal section and the induction of premature labor. We are sometimes told that embryotomy should have a very low mortality, and we occasionally see statistics that appear to justify this assertion; but many of the cases operated on were women who had previously given birth to living children, or who could have been delivered by the induction of premature labor, or at term unaided, or by the forceps or version. The

German statistics are particularly faulty in this respect, and Leopold's report of 20 consecutive cases delivered by craniotomy without a death is no fair criterion, for the conjugata vera diameter was 7.50 centimetres (nearly 3 inches), and in such cases craniotomy if carefully done should have a very low mortality; but it is contraindicated, and some one of the alternatives would give nearly as good maternal results, and would save most of the children. No better results are obtained in craniotomy than in England; they dread Cesarean section because of its local fatality, and prefer craniotomy in cases of pelvic deformity of low grade. Parry gives the British records in pelves of 2½ inches or less at about 20 per cent. De Soyre gives 52 cases of embryotomy in pelves less than 2.15 inches with 31 recoveries and 21 deaths, a mortality of 41.38 per cent.; and Maygrier 67 cases in pelves from 2.53 to 1.40 inches, with 39 recoveries and 28 deaths, a mortality of 41.79 per cent.; of these cases, 31 were in pelves measuring 2.34 inches at the highest, with 17 recoveries and 14 deaths, a mortality of 45.16 per cent. Rigaud and Stanesco give a mortality in 122 cases of embryotomy at 38.52 per cent. These are probably the most reliable statistics until very recently, and it will be observed that the conclusions are relatively uniform.

Dr. Wyder (*German Gynecological Society*, September 21, 1887), in 167 craniotomies from the obstetric polyclinic at the Charité, gives a percentage of 14.50 mortality; of these cases, only 126 had contracted pelves. In Carl Braun's Clinic, 1881 to 1885, craniotomy was done 49 times with 8 deaths, a mortality of 16.30 per cent.

Thorn (*Arch. für Gynäk.*, vol. xxiv. page 437) reports 80 cases from the Halle Clinic with 10 deaths, a mortality of 12.50 per cent.; and Merkel (*Arch. für Gynäk.*, vol. xxi. page 461) reports 100 cases with 8 deaths, a mortality of 8 per cent. That we may appreciate how very simple these cases were, it is only necessary to know, that of Thorn's list of 56 multiparæ, 39, and of Merkel's list of 68 multiparæ, 49 had given birth to living children, and most of them could probably have been delivered *per vias naturales* of living children.

No one will contend that craniotomy carefully performed should have any considerable mortality in such cases, but it will be claimed that some of the alternatives should be practised in the interest of

the child, for surely it has some claims to our protection. The following from Barnes is quoted in defence of embryotomy: "Craniotomy done under fair conditions, such as are postulated for Cesarean section—that is, done at a chosen time, with due skill—does not involve any maternal mortality." But the force of this argument is practically destroyed by his further statement (*British Gynecological Journal*, Part viii., 1886, page 315) that, if we save the life of the mother by sacrificing the child, she may afterward be delivered of living children by the induction of premature labor. As it is conceded that few children are born alive in pelves of less diameter than 3 inches conjugata vera, we may logically conclude that most of Barnes's cases had a diameter of 3 inches or more.

Wyder (*Archiv. f. Gynäk.*, vol. xxxii. page 1) gives the mortality of 215 cases of craniotomy at Berlin, Halle, and Leipzig at 5.60 per cent., but he gives no detailed account of the exact indications, and most of the cases were presumably the lesser forms of pelvic contraction. It will not be gainsaid, that craniotomy is often done on living children in cases where the women could have been delivered by the unaided efforts of nature, or by means that would have saved the lives of both mother and child; and any physician of large observation and experience knows of instances where a physician, or several physicians, had decided that craniotomy was necessary, but while preparing to operate, or because of delay occasioned by the refusal of the woman, her family, or her spiritual adviser, to have the operation done, a living child was born. It is a conspicuous fact, that the operation is relatively more frequently done by men who are comparatively ignorant of the science of obstetrics; as men become learned in obstetrics, the operation becomes less frequent. Collins performed craniotomy once in 141 cases of labor; Clark once in 248, and Ramsbotham once in 805; but Siebold performed it only once in 2095 labors; Baudelocque once in 2898 cases, and Moore Madden has never recognized its necessity or countenanced its performance. (*British Medical Journal*, October 2, 1887, page 627.)

As remarked by Dr. Busey, "The extraordinary frequency in the practice of some competent obstetricians is explicable only upon the theory of an automatic belief in its justifiability, which involves the more 'sweeping doctrine of necessary blamelessness for erroneous

conclusions' (Gladstone), or the favorite and broader doctrine of Ingersoll, 'The immunity of all error in belief from moral responsibility.'"

The *future welfare* of society and of State is practically ignored by the embryotomist; he sees nothing beyond the *present*, and is controlled by the belief that the mother is of much more immediate use to the family, society, and State, than the unborn child, and, therefore, it may be sacrificed. This belief probably had its origin in that ancient philosophy so forcibly enunciated by Cicero, and taught by moralists of all ages, that the life of the weaker and less useful, or that life which is of less value to State or society, may be sacrificed to protect the life of that person who is of greater value to State and society.

"Quid, si in una tabula sint duo naufragi, hique sapientes, sibine uterus rapiat, an alter cedat alteri? Cedat vero; sed ie, cuius magis intersit vel sua, vel republicae causa, vivere. Quid, si haec paria in utroque? Nullum erit certamen sed, quasi sorte aut micando victus, alteri cedat alter." (*Cicero, de Officiis*, Book III., xxiii., Pereya's ed.)

While pagan and stoic philosophers and moralists have been nearly unanimous in defence of this principle, such is not true of Christian philosophers and theologians. With few exceptions, theologians of the Catholic Church have always contended that embryotomy on the living child is forbidden by the commandments. This question was finally decided by Rome in 1884.

The decision of the Holy Office, in answer to the *dubium* of the Cardinal Archbishop of Lyons, is against the lawfulness of craniotomy on the living child, or at least *tuto doceri non posse*.

"Eminentissimi P. P. mecum inquisitores generales in congregatione generali habita Feria IV. re 28 labentes maii, ad examen revocarunt dubium abeminentia tua propositum 'an tuto doceri possit in scholis catholicis licitam esse operationem chirrurgicam quam craniotomiam appellant, quando scilicet, ea omnisa, mater et filius perituri sint; ea contra admissa salvanda sit mater infantis pereuntes?' Ac omnibus diu et mature perpensis, habita quaque ratione eorum quae hac in re a peritis catholicis viris conscripta ac ab eminentia tua huic Congregationi transmissa sunt, respondendum esse duxerunt: 'Tuto Doceri Non Posse.'"

Practically, the philosophy which justifies the killing of an inno-

cent person to save the life of another, if ever true, is not usually applicable to embryotomy, for women who have previously given birth to living children, or who have pelves large enough to give birth to living children in subsequent pregnancies, can generally be delivered without sacrificing the child. The exceptions are, in cases of monsters, hydrocephalus, etc. But in cases where it is claimed the operation is indicated, the women have usually had no living children, nor are they capable of having any; so their existence is necessary only so far as they are able to contribute to the immediate interest and welfare of husband, society, and State, and at death their usefulness is ended. In such instances, the killing of the child would be largely a selfish matter, for it may, without materially endangering the life of the mother, be delivered alive by abdominal section; it may then become a useful member of society and State, and produce children that may continue to multiply and do likewise.

The destruction of life by craniotomy is so great, and the injury to society and State so manifest, that it is our professional, moral, and political duty to substitute some of the alternatives in the interest of the child, if we can do so without doing injustice to the mother.

Nearly seven thousand children are sacrificed annually in the United States by embryotomy. This estimate is based upon the most favorable mortality reports of less than ten per cent., with a population of sixty millions, and one craniotomy (Tyler Smith) in every three hundred and forty labors.

At the close of a few generations the loss would be relatively very great.

Let us now briefly consider the results to mother and child where the alternatives have been adopted. We will not waste time considering the old statistics of Cesarean section where the operation was performed crudely with none of the modern and more successful modifications, and generally only as a *dernier ressort*, for in such cases it is not possible to get good results. Nor will we consider the results of lapara-elytrotomy, for this operation is too complicated for general adoption, and in the practice of expert operators has not given as good results as the improved Cesarean section, or Porro's operation. Nor is it hardly fair to include the statistics of the improved Cesarean section, or Porro's operation, in the United States, for nearly all these operations have been done after exhausting

all other means, with the women nearly dead, and seldom as operations of election.

The following are the most complete statistics available on the improved Cesarean section, Porro's operation, and the induction of premature labor, for which I am largely indebted to the courtesy of Dr. R. P. Harris, of Philadelphia.[1]

It will thus be seen that Porro's operation has saved in all countries 54.33 per cent. of the mothers, and 82.77 per cent. of all the children, or 137.10 lives out of 200 involved, while the improved Cesarean section has saved 75.77 per cent. of the mothers and 93.81 per cent. of the children, or out of a total of 200 lives has saved 169.58 lives. But if we very properly exclude the improved Cesarean operations in the United States, 81.48 per cent. of all the mothers were saved, thus saving out of 200 lives 175.29 lives. The above is conclusive that Porro's operation can only be substituted in exceptional cases for Cesarean section, unless future results materially change the statistics. So far as concerns the mothers, however, the results of 1888 are apparently in favor of Porro's operation, unless we again exclude the United States, the percentage being 84.61 against 78. By excluding the United States the improved Cesarean section gives a success of 85.71 per cent.

It will be seen from the following statistics collected by Spiegelberg in 1870, and by Litzmann, from the best authorities, that premature labor induced, and premature labor in contracted pelves, have not given as good results as the improved Cesarean section or Porro's operation. In Spiegelberg's 219 cases, 84.90 per cent. of the mothers and 32.10 per cent. of the children were saved, or 117 lives were saved out of 200; and in the 34 cases of Litzmann 44.20 per cent. of the mothers and 47.35 per cent. of the children were saved, or 101.55 lives were saved out of 200. In Litzmann's statistics of premature labor in small pelves a percentage of 68.80 of the mothers were saved, and 68.75 of the children, or 137.55 lives were saved out of 200.

Maygrier gives the results of induced labor in pelves of 2.73 inches and below, as follows: Mothers saved, 66.67 per cent.; children saved, 35.30 per cent.; or 101.97 lives saved out of 200. These are the best results that have been obtained, and the percent-

[1] See page 37.

PORRO-CESAREAN OPERATIONS.

No.	Countries.	Operators.	Localities.	Cases.	Women saved.	Women lost.
1	Italy	52	35	92	48	44
2	Austria	15	7	61	43	18
3	Germany	27	18	43	22	21
4	France	9	7	17	6	11
5	England	10	2	12	5	7
6	Russia	6	4	10	7	3
7	United States	9	7	9	2	7
8	Belgium	4	3	5	3	2
9	Scotland	4	2	5	1	4
10	Switzerland	2	2	4	3	1
11	Holland	2	2	2	1	1
12	Australia	2	2	2	2	0
13	Spain	1	1	1	0	1
14	Mexico	1	1	1	0	1
15	Japan	1	1	1	1	0
				265	144	121

26 operations, with 4 deaths, in 1888.

SANGER-CESAREAN OPERATIONS.

No.	Countries.	Operators.	Localities.	Cases.	Women saved.	Women lost.
1	Germany	44	22	92	79	13
2	Austria	13	7	32	26	6
3	United States	24	13	32	15	17
4	Russia	7	5	10	7	3
5	Holland	5	5	9	9	0
6	Italy	3	3	7	5	2
7	France	2	1	4	2	2
8	England	3	2	3	1	2
9	India	1	1	2	1	1
10	Switzerland	2	1	2	1	1
11	Denmark	1	1	1	1	0
				194	147	47

68 operations in 1888. 56 in Europe, with 8 deaths.
12 in the United States, with 7 "
68

age of lives saved might be materially lowered by deducting those children that died within a few days or weeks after birth.

In the statistics of Regaud and Stanesco in induced labor in pelves from 3.51 inches to 1.95 inches, 69.81 per cent. of the mothers were saved and 30.09 per cent. of the children, or 100 lives were saved out of 200. In pelves between 2.34 and 1.95 inches more than half the mothers and all the children died; so it will be seen that labor in pelves below 2.34 inches cannot be induced in the interest of the child. The most encouraging statistics of induced labor are given by Wyder (German Gynecological Society, 1887). He reports 98 cases in which 91.80 per cent. of the mothers were saved and 52 per cent of the children, or 143.80 lives were saved out of 200; but the conditions that indicated the induction of premature labor are not clearly given, and many of the pelves were probably relatively large.

The report by Wyder (*Archiv f. Gynäk.*, vol. xxx. p. 1) of 306 cases of premature labor, with a mortality of 3.90 per cent., is not worthy of consideration in this connection, and should not influence us in adopting the alternative of premature labor.

While the induction of premature labor shows results much worse than the improved Cesarean section, there are instances where it is a better alternative to craniotomy, and, therefore, the following facts may be useful:

It is never wise to induce premature labor in pelves with a conjugata vera less than 2.50 inches; the fetal head at seven months being only 2.70 inches in its biparietal diameter may be compressed 0.39 of an inch by the uterine contractions, thus enabling it to pass through the pelvis. If the contraction is not so great, pregnancy may continue longer, since the biparietal diameter measures at seven and a half months 2.90 inches, at eight months 3.10 inches, at eight and a half months 3.30 inches, at nine months 3.50 inches, and at term 3.70 inches.

That the Porro operation is preferable to the Cesarean section in some cases no one will deny, and Sänger gives the following indications for its performance:

1. "When the discharge of lochial secretions is rendered difficult or impossible *per vias naturales—i. e.*, by stenoses and atresiæ of the cervix and vagina, or by tortuosity and compression of the soft obstetric canal, due to a tumor not belonging to the uterus."

2. "By pregnancy in the closed-up half of a *uterus bicornis*, in which delivery is preferably effected by establishing an artificial opening toward the open half (strictly speaking, this is not a true Porro operation, since the remaining half of the uterus may be again impregnated)."

3. "When infection of the corpus uteri is evident."

4. "After repeated classical sectio-Cesaria."

5. "By serious osteomalacia."

When delivery *per vias naturales* is prevented by uterine or abdominal tumors, the alternative to craniotomy is to remove the tumors if it is possible to do so, otherwise the Porro operation is the proper alternative. Porro's operation is also indicated in ruptured uterus where the rent extends through all the coats, whether the child is in the abdominal cavity, the uterus, or has been delivered. If the blood, the bloody serum, and liquor amnii be thoroughly removed from the peritoneal cavity before decomposition or inflammation, the operation offers but few additional dangers and removes many. But the operation should be done immediately, for all the pathological changes are against the late operation. The woman may have recovered from the shock, but adventitious sacs, plastic adhesions, etc., will have formed, will prove troublesome, and will prevent success.

The above justifies the conclusion, that the risk to the mother in timely operations, and in cases of election, in abdominal section for the removal of a living child, is not greater than in embryotomy, and when the medical profession correctly appreciates this genuine truth, mutilating operations on the child will be relegated to their proper sphere, viz., cases where the pelvis is relatively large and the fetus is dead.

Since writing the above, I have received the following letter:

DEAR DR. WATHEN: Cesarean statistics are changing every day, and do not hold good very long, as about 6 Sänger operations are performed on an average monthly, and I am daily watching Case 208 on my list. If she recovers (this is her tenth day), it will make 16 out of 34 for the United States, and 157 out of 208 for the world, in twelve countries, with 187 children also saved. The Porro operations are 269 with 147 women saved, and 229 children delivered alive. So you see the Sänger leads in results to women, with 61 less operations.

Yours truly,

ROBERT P. HARRIS.

OCTOBER 17, 1889.